

WHAT IS CLAIMED IS:

1. A protection circuit, to be provided for a circuit arrangement having an inductive load and an FET as an N-channel MOS transistor provided upstream of the load with respect to a flow of power  
5 current, the FET controlling an energization state of the load, the protection circuit comprising:

a first connection changer interposed on a connection line between a gate of the FET and a gate drive voltage supply source, the first connection changer changing a connection state  
10 between a first connection state in which the gate is connected to the gate drive voltage supply and a second connection state in which the gate is connected to a ground.

2. The protection circuit according to claim 1, further  
15 comprising:

a first resistor interposed between the gate and a source of the FET; and

a second resistor interposed between the gate and the first connection changer or between the first connection changer  
20 and the ground.

3. The protection circuit according to claim 2, further comprising:

a second connection changer interposed on a connection  
25 line between the gate and the source of the FET, the second

connection changer for connecting and disconnecting the connection line;

wherein the first resistor is interposed on the connection line.

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4. A protection circuit, to be provided for a circuit arrangement having an inductive load and an FET as an N-channel MOS transistor provided upstream of the load with respect to a flow of power current, the FET controlling an energization state of the load, the protection circuit comprising:

a first connection changer interposed between a portion on a first connection line and a ground, the first connection changer connecting and disconnecting between the portion and the ground;

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wherein the first connection line connects a gate of the FET and a gate drive voltage supply source.

5. The protection circuit according to claim 4, further comprising:

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a first resistor interposed on a second connection line between the gate and a source of the FET; and

a second resistor interposed on a route from the gate to the ground through the first connection line and the connection changer.

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6. The protection circuit according to claim 5, further comprising:

a second connection changer interposed on the second connection line between the gate and the source of the FET, the second connection changer connecting and disconnecting the second connection line;

wherein the first resistor is interposed in the second connection line.

7. A protection circuit, to be provided for a circuit arrangement having an inductive load and an FET as a P-channel MOS transistor, the FET for controlling an energization state of the load, the protection circuit comprising:

a connection changer interposed on a connection line between a gate of the FET and a ground, the connection changer changing a connection state between a first connection state in which the gate is connected to the ground and a second connection state in which the gate is connected to a source of the FET;

a first resistor interposed between the gate of the FET and the connection changer or between the connection changer and the source of the FET; and

a second resistor interposed between the gate and the drain of the FET.

8. A protection circuit, to be provided for a circuit arrangement having an inductive load and an FET as a P-channel MOS transistor, the FET controlling an energization state of the load, the protection circuit comprising:

5        a connection changer interposed between a portion, on a connection line between a gate and a source of the FET, and a ground, the connection changer connecting and disconnecting between the portion and the ground;

10       a first resistor interposed on a route of from the gate of the FET to the source thereof through the connection line; and

      a second resistor interposed between the gate and a drain of the FET.

15    9. A protection circuit, to be provided for a circuit arrangement having an inductive load and an IGBT provided upstream of the load with respect to a flow of power current, the IGBT controlling an energization state of the load, the protection circuit comprising:

20       a connection changer interposed on a connection line between a gate of the IGBT and a gate drive voltage supply source, the connection changer changing a connection state between a first connection state in which the gate is connected to the gate drive voltage supply and a second connection state in which  
25    the gate is connected to a ground.

10. The protection circuit according to claim 9, further comprising:

5 a first resistor interposed between the gate and an emitter of the IGBT; and

a second resistor interposed between the gate of the IGBT and the connection changer or between the connection changer and the ground.

10 11. A protection circuit, to be provided for a circuit arrangement having an inductive load and an IGBT provided upstream of the load with respect to a flow of power current, the IGBT controlling an energization state of the load, the protection circuit comprising:

15 a connection changer interposed between a portion on a connection line and a ground, the connection changer connecting and disconnecting between the portion and the ground;

wherein the connection line connects a gate of the IGBT and a gate drive voltage supply source.

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12. The protection circuit according to claim 11, further comprising:

a first resistor interposed between the gate and an emitter of the IGBT; and

25 a second resistor interposed on a route from the gate

of the IGBT to the ground through the connection line and the connection changer.